Sample preparation and submission

- Use NCDA&CS soil sample boxes, label them completely and fill with soil to the red line.
- Complete the appropriate sample information form using permanent ink or pencil. You must list a crop or crop code in order to get lime and fertilizer recommendations. Forms are available from NCDA&CS regional agronomists, Cooperative Extension offices, the Agronomic Division office in Raleigh and online at www.ncagr.com/agronomi/forms.htm.
- Package the sample appropriately. Do not tape the soil sample box or put soil in a plastic bag. If sending several sample boxes through the mail, pack them carefully in a sturdy container, and mail them to the address given on the back of this publication. Detailed packaging instructions are available at www.ncagr.com/agronomi/pdffiles/packsoil.pdf.

The soil test report

Soil test results are mailed to the client and to the advisor(s) listed on the *Soil Sample Information* form. However, it is often more convenient to look for the report on the Agronomic Division's Web site www.ncagr.com/agronomi, where it is posted as soon as analysis is complete. Reports remain online for about three fiscal years, and data can be downloaded into a spreadsheet.

If you have questions about sampling procedure or need help interpreting a report, consult your NCDA&CS regional agronomist or other agricultural advisor. Additional information about soil tests and their interpretation is also available online at www.ncagr.com/agronomi/uyrst.htm.

North Carolina Department of Agriculture and Consumer Services

Steve Troxler, Commissioner of Agriculture

Agronomic Division
Colleen M. Hudak-Wise, Director

www.ncagr.com/agronomi/

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Mailing Address
1040 Mail Service Center
Raleigh NC 27699-1040

Physical Address [DHL, FedEx, UPS]
4300 Reedy Creek Road
Raleigh NC 27607-6465

For more information on sampling, interpreting agronomic reports or implementing recommendations, contact your NCDA&CS regional agronomist or other agricultural advisor.

Agronomic Sampling
Folder No. 2

prepared by
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and Catherine Stokes

revised June 2008

Soil Sampling Large Areas: Agricultural Crops, Pastures, Parks or Athletic Turf

The goal of soil sampling a large area is to collect a sample that provides good representation for the entire area. These guidelines may help.

Before sampling a large area, it is a good idea to make a detailed map. Copies of aerial photographs from soil surveys may be helpful. Divide the map into individual sample areas of 20 acres or less. Each unique area should ideally have similar soil type, planting history and management history.

Assign a short, permanent sample identifier to each unique area using appropriate FARM ID and SAMPLE ID designations that will help you remember the location. Keep in mind that the SAMPLE ID space on the soil box is limited to five characters.

Always use clean, stainless-steel sampling equipment and a clean, plastic bucket. Brass, bronze or galvanized tools contaminate the sample with copper and/or zinc. If the sample-mixing bucket has been used for fertilizer or other chemicals, wash it thoroughly before use.

Timing of sampling

Whenever possible, sample three to six months before planting. For field crops, submitting soil samples right after harvest provides plenty of time to plan a liming and fertilization program before the busy growing season. In September and October, the laboratory workload is relatively light, and results can be returned within about two weeks.

The laboratory has its greatest workload from November through March due to the thousands of agricultural samples received at this time. Turn-around time can be six weeks or more. Anyone who can schedule their sampling at another time of year is urged to do so.

Problem samples should be taken from around actively growing plants whenever growth or plant discoloration occurs. To make sure these samples receive priority treatment when they arrive at the laboratory, label the outside of the shipping containers prominently with the words *PROBLEM SAMPLES*.

Frequency of sampling

For coastal plain soils, collect samples every two years or test one-half of your land every year. Sandy soils lose nutrients and become acidic more quickly than the fine-textured clay soils found in piedmont and mountain regions. In these two regions, collect samples every three years or test one-third of your land every year.

Depth of sampling

For cultivated crops, sample the plow layer, usually six to eight inches (Figure 1). Before establishing new lawns, pastures, orchards or other large no-till or minimum-tillage areas, sample to a depth of six to eight inches. For established no-till or minimum tillage areas, take cores to a depth of four inches.

Traditional sampling strategy

When a 5- to 15-acre field of similar soil type will be limed and fertilized uniformly, collect a soil sample of 15 to 20 cores using a zigzag pattern (Figure 2A). This approach will help ensure that overall field conditions and variability are taken into account. It is best to divide fields greater than 15 acres into smaller units (about 5 acres) until variability is known.

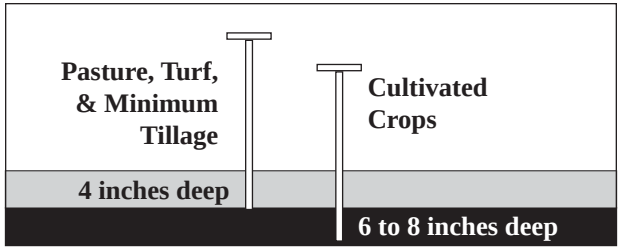

Figure 1. Proper sampling depth depends on tillage practices for the area sampled.

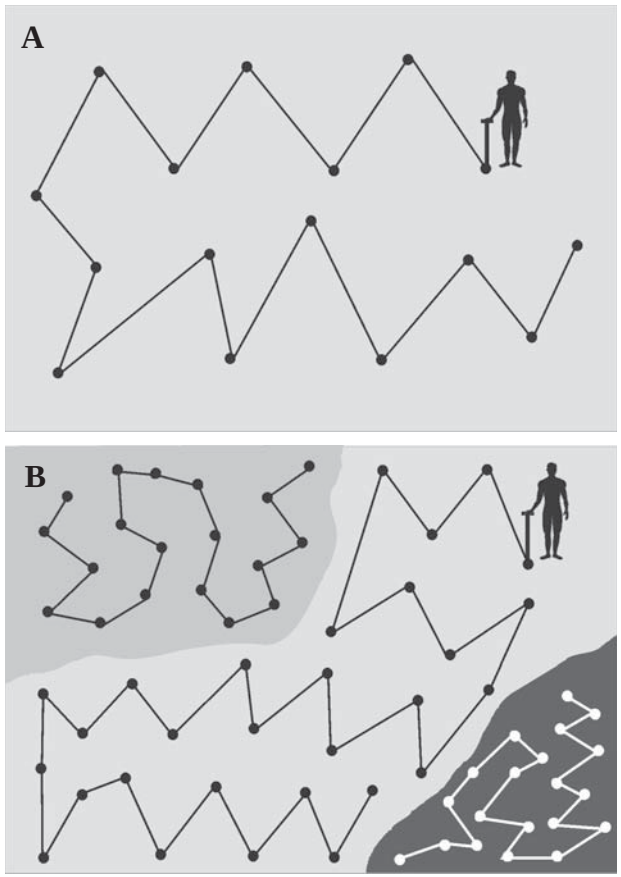

Figure 2. Sampling strategies. **A)** Use a zigzag pattern to collect cores randomly from a field with uniform soil. **B)** Subdivide fields that have distinct zones (soil type, cropping history, etc.) if it is feasible to lime and fertilize each area separately.

In any sampling, avoid small areas that differ markedly from the rest of the field—wet spots, severely eroded areas, old building sites, fence rows, spoil banks, burn row areas, old woodpile or fire sites and fertilizer application bands. Such samples can bias evaluations of a field's nutrient-supplying capacity.

Intensive sampling strategy

Over recent years, use of global positioning systems (GPS) has become increasingly used to document soil variability. This approach to soil testing is often coupled with variable nutrient application to match soil test needs. Information about precision sampling may be found at www.soil.ncsu.edu/publications/Soilfacts/AG-439-36/AG-439-36.pdf.

Grid sampling is a type of precision sampling whereby samples are collected in a field that has been overlaid with grids typically 2.5 acres in size. Within a grid, cores may be collected randomly (***cell sampling***) or at a certain distance from the center of the grid (***point sampling***).

Directed sampling is another technique that is also used to observe soil variability and fine-tune nutrient application. Sample areas are delineated using various spatial data (yield data, electrical conductivity, elevation, etc.). Samples are usually taken randomly within a zone. Directed sampling may be referred to as ***zone sampling*** (Figure 2B).